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Time trends in vaccine delivery over two decades in a full-time immunization clinic of a tertiary care centre

V.P. Verghese [1,*], R.Z. Kompithra [1], L. Mathew [1], A. Simon [1], S. Mathai [1], T.J. John [2], P. Raghupathy [1]

[1] *Christian Medical College, Vellore, Vellore, India*
[2] *Christian Medical College, Vellore, India*

Background: India's national Expanded Programme on Immunization(EPI) launched in 1978 offers vaccines such as BCG, DPT, OPV, and measles vaccine free of cost, while pediatrician-recommended non-EPI vaccines are available for purchase in the country. On September 1st 1994 the Pediatric Department, Christian Medical College, Vellore expanded immunization services from 2 afternoons/week into a daily full-time walk-in immunization clinic offering both EPI and non-EPI vaccines. In this study we analyze time trends in vaccination provided by this clinic over two decades.

Methods & Materials: Manually entered records till 1st January 1996 and subsequent computerized clinic records were accessed for information on vaccine types and doses delivered from 1st January 1995 to 31st December 2014.

Results: The number of children attending the clinic showed a >2-fold increase from 31045 in 1995 to 89439 in 2014, averaging >7000/month and nearly 250/day in 2014. EPI vaccines increased proportionately for DPT (13313 in 1996 to 30641 doses in 2014), 4-fold for BCG(2650 in 1996 to 11610 in 2014) and over 5-fold for OPV(10452 in 1996 to 52200 in 2014). *Hemophilus influenza*e type b(Hib) vaccine was made available as a single vaccine from June 1997, as a quadrivalent(DPT-Hib) vaccine from September 1999 and as a pentavalent(DPT-Hepatitis B-Hib) vaccine from December 2002, nearly a decade before pentavalent vaccine provision on the national programme in 2011. Hib vaccine doses increased 6-fold from 4420 doses in 1998 to 28415 in 2014, with >15000 doses administered annually from 2001 and >20000 doses annually from 2008. The proportion of DPT and Hib administered as a combination vaccine increased from 3.7% in 1999 to 92% for DPT and 99% for Hib in 2014. Number of injections received at each child-visit did not exceed 2, and the average cost of a visit providing combination vaccines was kept to <500 INR(<10 USD).

Conclusion: Affordability and ease of access were the keys to sustained growth in vaccine provision from this private not-for-profit clinic of a tertiary care centre, and similar strategies can be used to improve immunization coverage in the country. Hib disease reduction in our community was documented by us earlier, attributable to Hib vaccine provision from this clinic.

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Correlation of Interferon-gamma and Interleukin-28B levels in patients with chronic hepatitis C viral infection with or without Schistosoma mansoni coinfection

S.Z.A. Eid [1], N.F. Abdeltawab [2,*], S. Melek [1], M. Amin [2]

[1] *National Organization for Drug Control and Research (NODCAR), Cairo, Egypt., Cairo, Egypt*
[2] *Faculty of Pharmacy, Cairo University, Cairo, Egypt*

Background: Hepatitis C viral infection (HCV) presents a serious health problem worldwide and is endemic in Egypt. Egypt has the highest prevalence of HCV in the world with an infection rate of one in five individuals. HCV infection in Egypt is usually associated with *Schistosoma mansoni* coinfection, another endemic disease in Egypt since the Pharos. Interleukin-28B (IL-28B) and interferon-gamma (IFN-g) are two of the mostly recognized immunological cytokines appearing in response to these diseases. The aim of our study was to investigate the relationship between IL-28B and endogenous IFN-g in untreated patients infected with HCV alone and coinfected with *S. mansoni*.

Methods & Materials: Serum levels of IFN-g and IL-28B were measured by ELISA in three groups: 50 untreated patients with chronic HCV infection (group I), 22 untreated patients with chronic HCV co-infected with *S. mansoni* (group II), and 35 healthy control subjects (group III). All patients were confirmed for HCV RNA positivity, with viral load quantitated by PCR. Routine liver function tests were performed for all groups, and diagnosis of *S. mansoni* infection was based on seropositivity for antischistosomal antibody by Indirect Haemagglutination technique.

Results: We found that serum total protein, albumin levels, and AST/ALT ratio were higher in HCV patients than in both HCV co-infected with *S. mansoni* and control groups (p<0.01). Meanwhile, g-GT levels were higher in HCV patients co-infected with *S. mansoni* than HCV alone (p<0.0001). IFN-g and IL-28B levels were directly correlated to viral load in both HCV and HCV co-infected with *S. mansoni* groups (p<0.001). Both serum IFN-g and IL-28B were significantly elevated in both chronic HCV patients and those co-infected with *S. mansoni* compared to controls (p<0.0001). Correlation analyses showed that IFN-γ and IL-28B were positively correlated in patients with chronic HCV monoinfection (r=0.95, p<0.0001) and coinfection (r=0.87, p<0.0001) but not in control group.

Conclusion: In conclusion, our data suggests a strong positive correlation between IFN-γ and IL-28B in patients infected with chronic HCV with or without *S. mansoni* coinfection. Also, both cytokines are found to be associated with HCV viral load either with or without *S.mansoni* coinfection.

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